Visibility, Conspicuousness and Attention

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Abstract

A method is proposed for measuring the visual conspicuity of an object in its background. Associated with each object is a conspicuity area, which is defined as the retinal area within which the object to be searched for is seen in a brief presentation. The size of this area can be used as a measure of visual conspicuity. Directing attention towards a certain location in the retinal field influences the shape of the retinal area concerned. Visibility and visual conspicuity turned out to be linked by directed attention. The experimental results are interpreted in terms of external and internal determiners of attention.

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References

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Discussion

Greve: (a) Is the speaker of the opinion that his conclusions also bear on peri-metry? Isn't there a difference between the experimental setup of the speaker, where

1 Published in extenso in *Vision Res.* 11: 563–576 (1971).

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there is mention of a structured background and the even unstructured perimetric background?

Isn't a perimetric stimulus conspicuous? (b) I know of literature mentioning that the height of the absolute threshold is not influenced by localized attention [Mertens, 1956]. My personal experience in perimetry is likewise that localized attention does not influence the differential threshold.

Engel: Use of a structured instead of an even background may, as has been described, lead to a reduced peripheral observability of the test object concerned. Furthermore, with such backgrounds it appears that the size of the visual field may depend on the giving or not giving of preinformation to the observer about the peripheral place of offering the test object. Such an effect is unknown to me with even backgrounds. It is true that Lie [1969] found a slight influence of this advance knowledge on the absolute intensity threshold in the periphery, but this was not found by Mertens [1956].

Introduction of a second task (visual or auditory) proves to raise this luminance threshold clearly [Abernethy and Leibowitz, 1971; Webster and Haslerud, 1964]. However, the effect decreases again with increasing experience on the part of the observer with the experiment concerned. The

experience that in single stimulus perimetry the localized attention does not influence the differential threshold, therefore agrees with this. Possibly some influence may be found as a result of other attention factors like vigilance and possible fixation problems with inexperienced observers (2nd task) (for references, see above).

Hagedoorn: At a previous meeting I proposed a new method of campimetry: inverse campimetry. Here the test subject follows the fixation object and he knows the localization of the (fixed) stimulus source. Your study seems to have demonstrated objectively that indeed thus the sensitivity of this examination is increased.

Engel: Your proposal of inverse campimetry may indeed exclude the possible influence of preinformation about the place of the test object. Properly speaking, the accuracy of fixation and the attention needed for this would also have to be taken into consideration.

Van Balen: Did you measure anything of intensity of attention and did you study whether this is inversely proportional to the field of attention, as sometimes stated by psychologists?

Engel: Up to now I have done nothing in the field of measuring of intensity of attention. It seems a problem to me to find a criterion for the strength of attention.

Van Sensus: When using the Amsler square test, one notices that sometimes scotomas are not indicated until, on the strength of the fundus picture, the site is indicated where an abnormality might be expected. This often concerns a negative observation, namely, an interruption in the pattern. Might it be possible to design a background against which this is more striking? For example, by a binocular 'depth' perception with slight metamorphosia?

Engel: Your observation therefore confirm the influence of directing attention to the observation of

in this case

interruptions in a structured background. I have no personal experiences with the Amsler square test. It is possible that complementary screens offered haploscopically (interocularly) give some improvement.